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Lin

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(54) **MULTIPLE SOUND CHANNELS SPEAKER**

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H04R 3/12 (2006.01)

(52) **U.S. Cl.**
CPC ***H04R 3/12*** (2013.01)

(58) **Field of Classification Search**
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USPC 381/1, 17, 23, 81, 300, 104, 370; 463/35; 700/94; 704/503; 725/81
See application file for complete search history.

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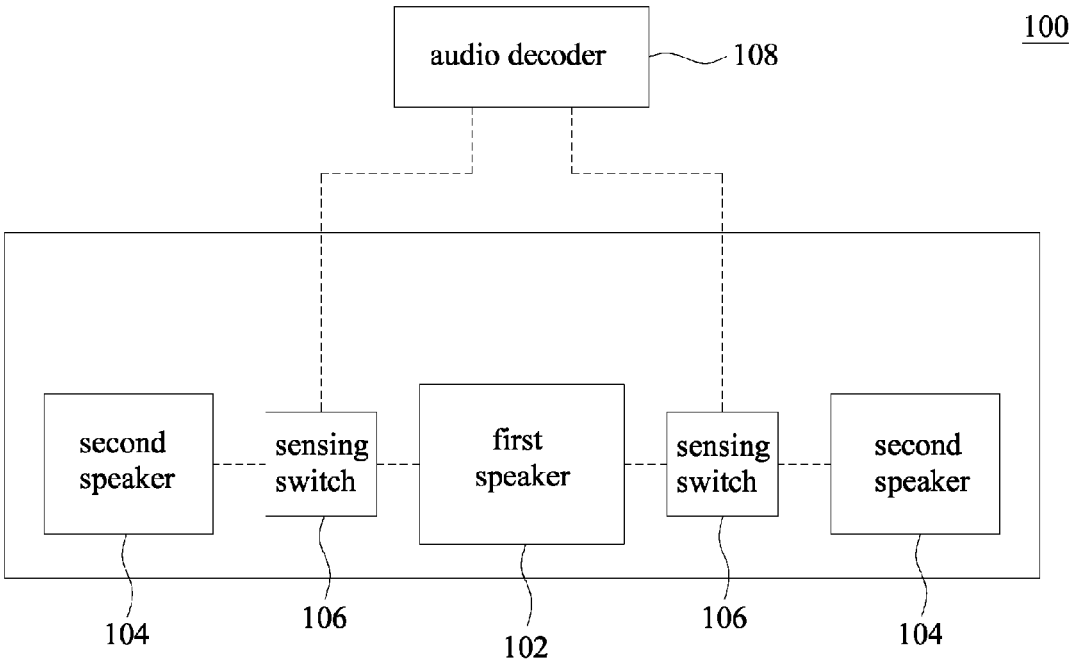
(57) **ABSTRACT**

A multiple sound channels speaker is disclosed herein and includes a first speaker, at least one second speaker, a sensing switch and an audio decoder. The second speaker is adjacent to the first speaker, and the sensing switch is disposed between the first speaker and the second speaker. The audio decoder is electrically connected to the sensing switch. When the second speaker and the first speaker are separated, the sensing switch outputs a signal to the audio decoder and the sound channels are switched.

10 Claims, 4 Drawing Sheets



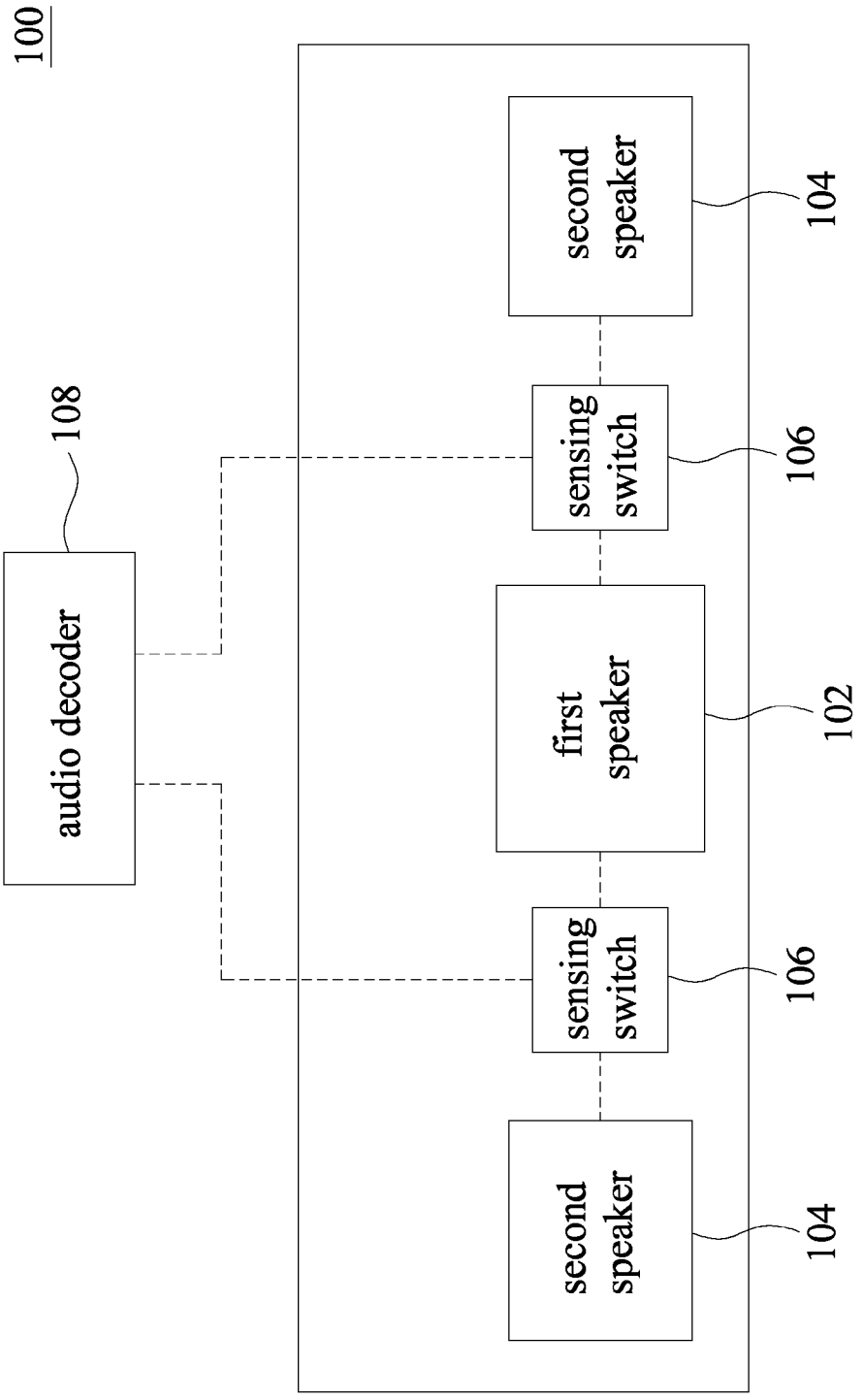

100
audio decoder
108
second speaker
104
sensing switch
106
first speaker
102
sensing switch
106
second speaker
104

FIG. 1a

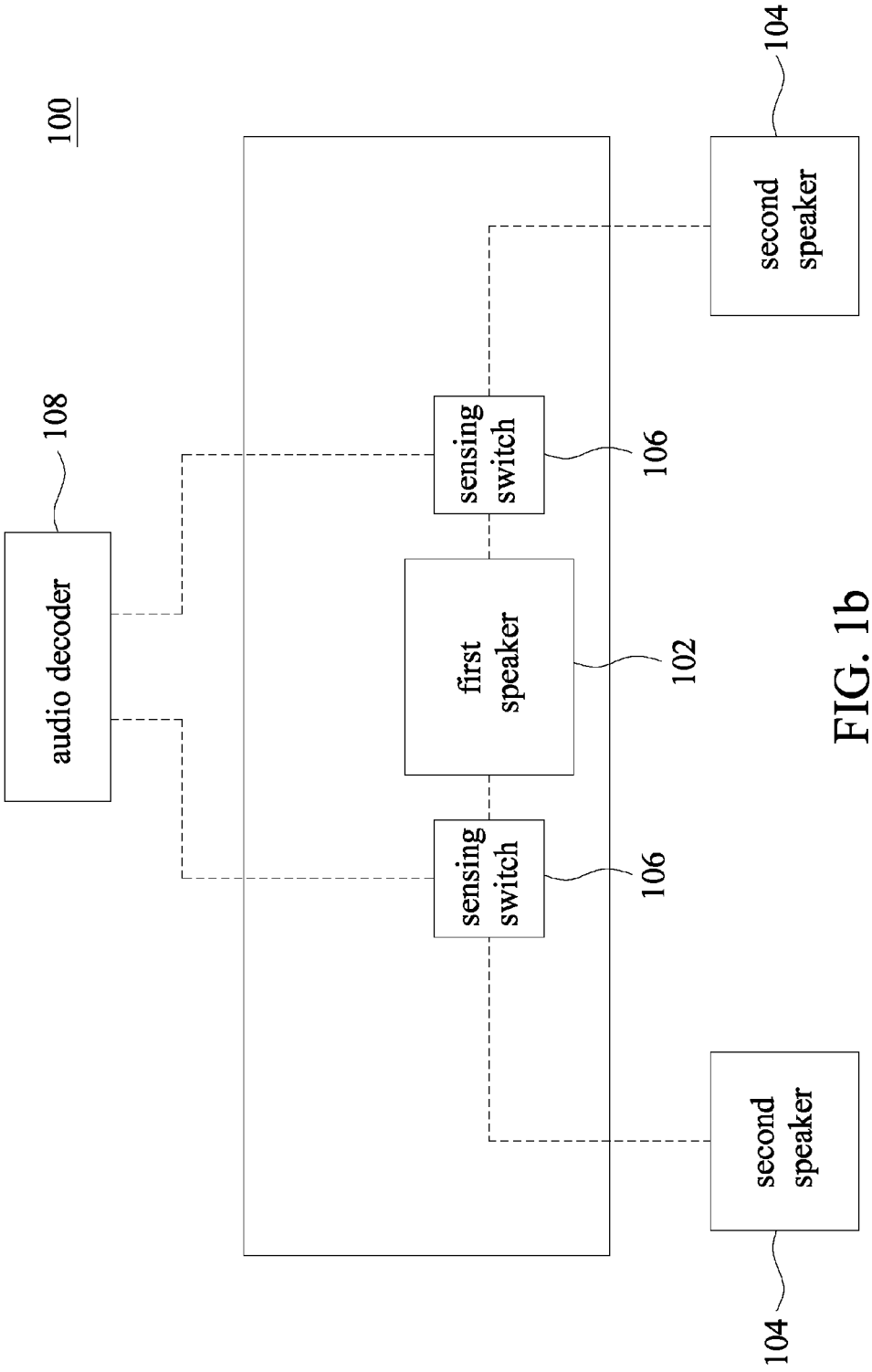

100
104
second speaker
108
audio decoder
sensing switch
106
first speaker
102
sensing switch
106
second speaker
104

FIG. 1b

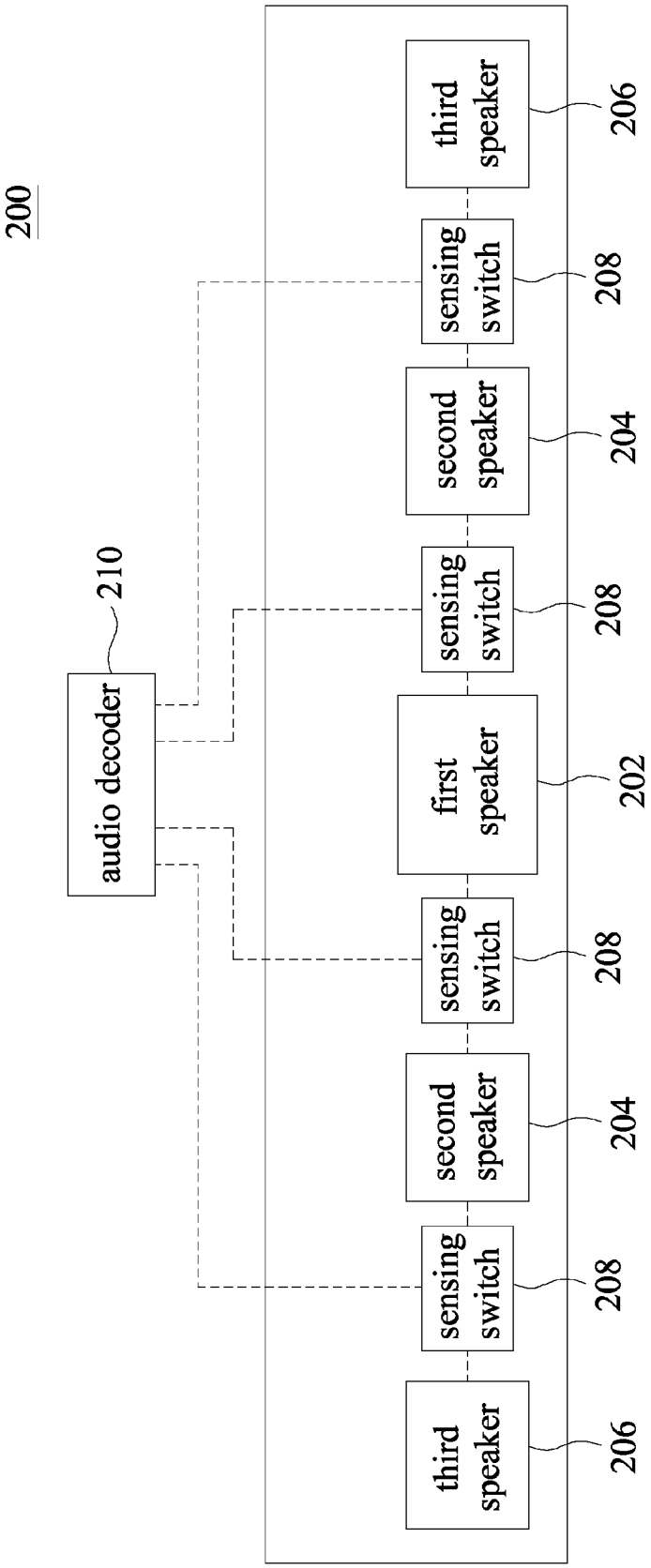

200
audio decoder
210
third speaker
206
sensing switch
208
second speaker
204
sensing switch
208
first speaker
202
sensing switch
208
second speaker
204
sensing switch
208
third speaker
206

FIG. 2a

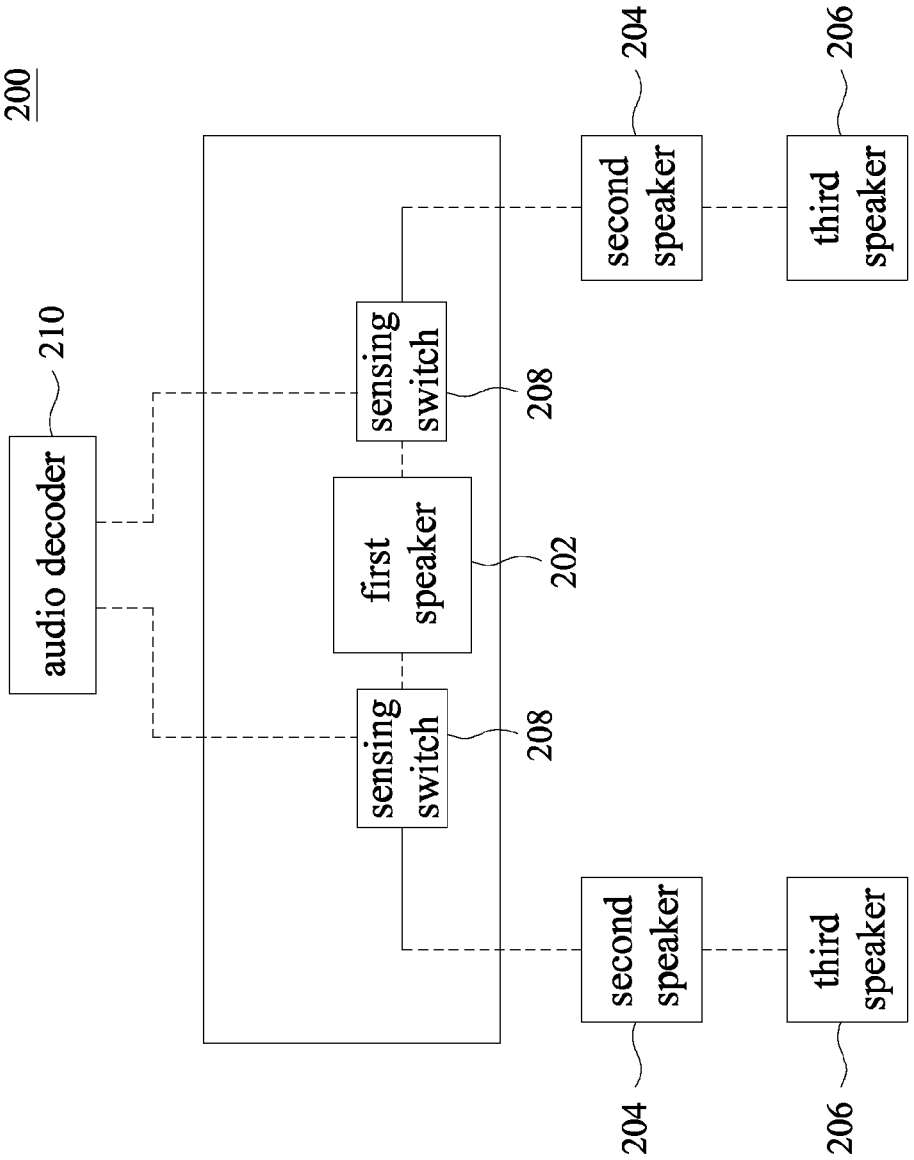

200
audio decoder
210
sensing switch
208
first speaker
202
sensing switch
208
second speaker
204
third speaker
206
second speaker
204
third speaker
206

FIG. 2b

MULTIPLE SOUND CHANNELS SPEAKER

BACKGROUND

1. Technical Field

This disclosure relates to a multiple sound channels speaker, and more particularly to a multiple sound channels speaker which switches different sound channels by no means of any manual switch.

2. Description of the Related Art

Nowadays, due to progress of computer technology and internet, much audio and video broadcasting is realized on the computer via the internet. Therefore, many peripheral multimedia apparatuses are highly needed, and more and more high-level speakers are sold, which are 2.0, 5.1 or 7.1 sound channels speakers. Nevertheless, the performances of such 5.1 or 7.1 sound channels speakers are not always needed in any time. That is, in case of phoning internet call, it merely needs single sound channel or dual sound channels speakers, but in case of watching TV/movie or playing electronic games, the single sound channel or dual sound channels speakers should be switched to 5.1 or 7.1 sound channels speakers correspondingly. Even though many speakers capable of switching different sound channels are sold, but a press button is still needed specially to control the different sound channels switching.

However, the different sound channels are unable to be switched rapidly by utilizing the press button. Therefore, this disclosure discloses a multiple sound channels speaker which switches different sound channels rapidly and instinct to overcome the prior art defect.

SUMMARY

In view of the foregoing prior art defect, the objective of this disclosure is to provide a multiple sound channels speaker capable of switching different sound channels without any press button. Further, another objective of this disclosure is to provide a multiple sound channels speaker capable of switching different sound channels rapidly and instinct

Accordingly, the multiple sound channels speaker provided comprises a first speaker, a second speaker, a sensing switch and an audio decoder, wherein the second speaker is adjacent to the first speaker, the sensing switch is disposed between the first speaker and the second speaker, and the audio decoder is electrically connected to the sensing switch. When the first speaker is separated from the second speaker, the sensing switch outputs a signal to the audio decoder, so as to switch sound channels correspondingly.

Furthermore, the multiple sound channels speaker provided further comprises a first speaker, a second speaker, a third speaker, at least two sensing switches and an audio decoder, wherein the second speaker is adjacent to the first speaker, the third speaker is adjacent to the second speaker, the sensing switches are disposed between the first speaker and the second speaker, and between the second speaker and the third speaker respectively, and the audio decoder is electrically connected to the sensing switch. When the first speaker is separated from the second speaker, or when the second speaker is separated from the third speaker, the sensing switch outputs a signal to the audio decoder, so as to switch sound channels correspondingly.

A detailed description is given in the following embodiments with reference to the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

This disclosure can be more fully understood by referring to the following detailed description and examples with references made to the accompanying drawings, wherein:

FIGS. **1***a* and **1***b* is the schematic diagram of a preferred embodiment of a multiple sound channels speaker according to this disclosure.

FIGS. **2***a* and **2***b* is the schematic diagram of another embodiment of a multiple sound channels speaker according to this disclosure.

DETAILED DESCRIPTION OF THE INVENTION

The following description is of the best-contemplated mode of carrying out this disclosure. This description is made for the purpose of illustrating the general principles of this disclosure and should not be taken in a limiting sense. The scope of this disclosure is best determined by reference to the appended claims.

FIG. **1***a* is the schematic diagram of a preferred embodiment of a multiple sound channels speaker according to this disclosure. As shown in FIG. **1***a*, the multiple sound channels speaker **100** is an integrally multiple sound channels speaker **100**, which essentially comprises a first speaker **102**, at least one second speaker **104**, a plurality of sensing switches **106** and an audio decoder **108**. The first speaker **102** is adjacent to the second speaker **104**, and the first speaker **102** is wired connected to the second speaker **104**, or the first speaker **102** is wireless transmitted to the second speaker **104**. The sensing switch **106** is disposed between the first speaker **102** and the second speaker **104**, wherein the sensing switch **106** is a mechanical trigger device or a touched sensing device, and to be emphasized is that this disclosure is not limited to the disclosed embodiments. The audio decoder (Audio Codec IC) **108**, electrically connected to the sensing switch **106**, is used for judging switching condition of the sound channels by means of receiving an output signal form the sensing switch **106**. Generally, the first speaker **102** and the second speaker **104** are connected together to form a single sound channel or dual sound channels speaker. As shown in FIG. **1***b*, when the first speaker **102** is separated from the second speaker **104**, the sensing switch **106**, disposed between the first speaker **102** and the second speaker **104**, outputs a signal to the audio decoder **108**. Therefore, the audio decoder **108** switches the multiple sound channels speaker **100** from a single sound channel or dual sound channels speaker to a 2.1 sound channels speaker, and switches the two second speakers **104** to left and right sound channels speakers respectively, and further switches the first speaker **102** to a low-sounding speaker.

FIG. **2***a* is the schematic diagram of another embodiment of a multiple sound channels speaker according to this disclosure. As shown in FIG. **2**A, the multiple sound channels speaker **200** essentially comprises at least one first speaker **202**, at least one second speaker **204**, at least one third speaker **206**, a plurality of sensing switches **208** and an audio decoder **210**. The first speaker **202** is adjacent to the second speaker **204**, and the second speaker **204** is adjacent to the third speaker **206**, hence the first speaker **202**, the second speaker **204** and the third speaker **206** are wired connected or wireless transmitted to each other. For instance, the wireless transmitted technologies include but not limited to infrared wireless transmission or blue tooth wireless transmission. The sensing switches **208** are disposed between the first speaker **202** and the second speaker **204**, and between the second speaker **204** and the third speaker **206** respectively, wherein the sensing switches **208** are mechanical trigger devices or touched sensing devices, and to be emphasized is that this disclosure is not limited to the disclosed embodiments. The audio decoder **210**, electrically connected to the sensing switches **208**, is used for judging switching condition of the sound channels

by means of receiving output signals form the sensing switches **208**. Generally, the first speaker **202**, the second speaker **204** and the third speaker **206** are connected together. Besides, when the second speaker **204** is separated from the third speaker **206**, the sensing switch **208**, disposed between the second speaker **204** and the third speaker **206**, outputs a signal to the audio decoder **210**. Therefore, the audio decoder **210** switches the multiple sound channels speaker **200** from a single sound channel or dual sound channels speaker to a 2.1 sound channels speaker, and switches two third speakers **206** to left and right sound channels speakers respectively, and further switches the first speaker **202** and second speaker **204** to low-sounding speakers.

In addition, as shown in FIG. **2**B, when the second speaker **204** is separated from the first speaker **202**, the sensing switch **208**, disposed between the first speaker **202** and the second speaker **204**, also outputs a signal to the audio decoder **210**. Thus, the multiple sound channels speaker **200** switches from a 2.1 to 5.0 sound channels speaker, wherein the first speaker **202** is the main sound channel speaker, the second speakers **204** are the left-front and right-front sound channels speakers, and the third speakers **206** are the left-rear and right-rear sound channels speakers correspondingly. Accordingly, when the above mentioned speakers are separated from each other, the sensing switches **208**, disposed among those speakers, drive the audio decoder **210** to switch sound channels correspondingly, so as to use no any press button. In detail, the above mentioned embodiments of this disclosure does not limit to merely switch a single sound channel speaker to a 2.1 or 5.0 sound channels speaker, said single sound channel or dual sound channels speakers can be further switched to 2.0, 5.0 or 7.1 sound channels speakers by adding or removing the speakers correspondingly. On the other hand, the switching sequence of those speakers is to separate the first speaker **202** from the second speaker **204** first, then separate the second speaker **204** from the third speaker **206**, such that the purpose of switching a dual sound channels speaker to a multiple sound channels speaker could be achieved on the same way.

In sum, one of the objectives of this disclosure can be achieved to switch sound channels directly and instinct when said speakers are separated from each other by means of the sensing switches, which is convenient and efficient because it is not necessary for the user to switch the sound channels by utilizing a manual switch.

While the invention has been described by way of example and in terms of the preferred embodiments, it is to be understood that the invention is not limited to the disclosed embodiments. To the contrary, it is intended to cover various modifications and similar arrangements. Therefore, the scope of the appended claims should be accorded the broadest interpretation so as to encompass all such modifications and similar arrangements.

What is claimed is:

1. A multiple sound channels speaker, comprising:

a first speaker;

at least one second speaker, selectively disposed adjacent to the first speaker or separated from the first speaker;

a sensing switch disposed between the first speaker and the second speaker, for determining whether the second speaker is separated from the first speaker; and

an audio decoder electrically connected to the sensing switch,

wherein when the second speaker is disposed adjacent to the first speaker, the audio decoder switches the first speaker and the second speaker into a single sound channel, and; when the sensing switch determines that the first speaker is separated from the second speaker, the sensing switch outputs a signal to the audio decoder, so as to switch the first speaker into a first sound channel and the second speaker into a second channel.

2. The multiple sound channels speaker as claimed in claim **1**, further comprising at least one third speaker, wherein the third speaker is adjacent to the second speaker.

3. The multiple sound channels speaker as claimed in claim **1**, wherein the first speaker is wired connected to the second speaker.

4. The multiple sound channels speaker as claimed in claim **1**, wherein the first speaker is wireless transmitted to the second speaker.

5. The multiple sound channels speaker as claimed in claim **1**, wherein the sensing switch is a mechanical trigger device.

6. The multiple sound channels speaker as claimed in claim **1**, wherein the sensing switch is a touched sensing device.

7. A multiple sound channels speaker, comprising:

at least one first speaker;

at least one second speaker, selectively disposed adjacent to the first speaker or separated from the first speaker;

at least one third speaker, selectively disposed adjacent to the second speaker or separated from the second speaker;

at least two sensing switches disposed between the first speaker and the second speaker, and between the second speaker and the third speaker respectively, the sensing switch disposed between the first speaker and the second speaker determining whether the second speaker is separated from the first speaker and the sensing switch disposed between the second speaker and the third speaker determining whether the third speaker is separated from the second speaker; and

an audio decoder electrically connected to the sensing switch,

wherein when the first speaker, the second speaker and the third speaker are disposed together, the sensing switch outputs a first signal to the audio decoder, so as to switch the first speaker and the second speaker into a single sound channel;

when the sensing switch disposed between the second speaker and the third speaker determines that the third speaker is separated from the second speaker, the sensing switch outputs a second signal to the audio decoder, so as to switch the first speaker and the second speaker into a first sound channel and to switch the third speaker into a second sound channel;

when the sensing switch disposed between the second speaker and the third speaker determines that the third speaker is separated from the second speaker while the sensing switch disposed between the first speaker and the second speaker determines that the second speaker is separated from the first speaker, the sensing switches outputs the first signal and a second signal to the audio decoder, so as to switch the first speaker into a third sound channel, to switch the second speaker into a fourth sound channel, and to switch the third speaker into a fifth sound channel.

8. The multiple sound channels speaker as claimed in claim **7**, wherein the first speaker, the second speaker and the third speaker are wired connected or wireless transmitted to each other.

9. The multiple sound channels speaker as claimed in claim **7**, wherein the sensing switch is a mechanical trigger device.

10. The multiple sound channels speaker as claimed in claim **7**, wherein the sensing switch is a touched sensing device.

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